



Preliminary Close Out Report Jennison-Wright Superfund Site Granite City, Madison County, Illinois

I. INTRODUCTION

This Preliminary Close Out Report (PCOR) documents that Illinois Environmental Protection Agency (Illinois EPA) has substantially completed all major construction activities for the Jennison-Wright Superfund site. This PCOR has been completed in accordance with the Close Out Procedures for National Priorities List Sites (OSWER Directive 9320.2-09A-P, January 2000) and the "Addendum to Policy for Close Out Procedures for National Priorities List Sites" (OSWER 9320.2-13, December 6, 2005). U.S. Environmental Protection Agency (U.S. EPA), Illinois EPA, Illinois EPA's contractors, Ecology & Environment, Inc. (E&E) and Bodine Environmental Services, Inc. conducted a pre-final inspection on September 16, 2009. With the exception of punch list items that are being addressed, Illinois EPA has substantially completed the construction in accordance with the remedial design (RD) plans and specifications. The remedy is expected to perform as designed and any expected future adjustments are likely to be minimal in nature. In addition, the Illinois EPA is conducting activities intended to achieve performance standards and site completion.

II. SUMMARY OF SITE CONDITIONS

Background

The Jennison-Wright site is a 20-acre abandoned wood treating facility located at 900 West 22nd Street in Granite City, Madison County, Illinois, approximately 6 miles northeast of downtown St. Louis, Missouri (Figure 1). The site is approximately 2 miles east of the Mississippi River, in Section 13, Township 3 North, Range 10 West. The area surrounding the site is a mixed residential-industrial neighborhood. The site is bisected by 22nd Street. A waterworks facility, Illinois-American Water Company, is immediately north of the site. Railroad tracks border the site along its entire eastern boundary, and an alley and residences border the site along its entire western boundary.

During its operations, Jennison-Wright facility engaged in wood treatment of railroad ties and wood blocks, using creosote, pentachlorophenol (PCP), and zinc naphthanate. Jennite, an asphalt sealant, was also manufactured at the site. The manufacturing process areas were located on the southern portion of the site, south of 22nd Street. The northern portion of the site, north of 22nd Street, was used for raw lumber storage and as a drying and storage area for treated railroad ties and wood block. The southern portion of the site contained both an aboveground and buried railcar that had been used to dispose of waste creosote and PCP. Several contaminated soil stockpiles were located across the site, and one such area located off the northeast corner of the site was called Area H. Area H, the 22nd Street Lagoon, and the Jennite pit were on-site disposal pits where manufacturing wastes were dumped. Other features in the southern part of the site

included the transite building, Jennite Building with two storage silos, tank farm (including the two railcars), creosote process area, PCP process area, sawmills, office, and other operations buildings. Operations at the site ceased in 1989. Currently, there is no on-site use of the property. All former site buildings have been demolished. The anticipated future use of the property is assumed to be commercial/industrial.

Contaminants of concern in site soil included phenols, dioxins, and a number of semi-volatile organic compounds (SVOCs) most of which were polyaromatic hydrocarbons (PAHs). Benzo(a)pyrene, a PAH, was detected in site soil samples at a maximum concentration of 2,800,000 micrograms per kilogram (ug/kg), and another PAH, naphthalene, was detected at concentrations up to 4,200,000 ug/kg. Pentachlorophenol (PCP) was detected in site soils at concentrations up to 670,000 ug/kg. Dioxins were detected in site soils at a toxicity equivalency factor (TEF) of up to 66 ug/kg. Groundwater at the site contained phenols and PAHs, as well as volatile organic compounds (VOCs) such as benzene, xylenes, and toluene.

Engineering Evaluation/Cost Analysis and Removal Actions

The first removal action at the site was conducted in 1992 by Illinois EPA and consisted primarily of stabilizing the site. An on-site waste lagoon called the Jennite pit along the east boundary of the south portion of the site had become semi-liquid and begun to migrate off-site. To temporarily alleviate this problem, Illinois EPA removed the overflowing material and placed it in three cut-off tanks. A temporary clay cap was constructed using materials on site to stabilize the boundaries of the Jennite pit. Additionally, approximately 175 drums of various known and unknown materials were found on site including 15 drums of creosote contaminated asbestos insulation. These drums were stored in an on-site building.

Illinois EPA initiated the second removal action in November 1994. The action implemented the recommendations in the 1994 Engineering Evaluation/Cost Analysis (EE/CA) and included installation of a six-foot high chain link fence around an area of stockpiled soil and a drainage area at the northeast corner of the site (Area H). In addition, soils around on-site storage tanks and railroad cars were excavated and disposed of, and aqueous waste from the various storage vessels was treated using an oil/water separator and the decanted water was disposed of off-site at a water treatment plant. Additional tasks performed were removal and disposal of creosote waste material from storage vessels; characterization and proper disposal of the material in the drums stored in an on-site building; removal of contaminated soil in the three cutoff tanks in the south portion of the site; and decontamination and dismantling of all storage vessels. In addition, a protective geomembrane and clay cap was installed over the Jennite pit.

The Jennison-Wright site was proposed to the National Priorities List (NPL) on October 2, 1995, and was added to the NPL on June 17, 1996. From 1997 to 1999, an EE/CA for remedial action was conducted, and in 1999 a Record of Decision (ROD) was signed. Although the 1999 ROD described the remedy as consisting of five operable units (Soils and Wastes, Non-Aqueous Phase Liquids, Groundwater, Buildings, and Miscellaneous Items), because the remedial action undertaken in 2004 was to address all aspects of the site, the site is treated as one operable unit instead of as five individual operable units.

Prior to initiation of remedial action, Illinois EPA conducted a third removal action at the site in 2003. The removal action consisted of demolishing on-site buildings; removing aboveground storage tanks, underground storage tanks and debris piles; and constructing a permanent decontamination pad in the southern portion of the site. In addition, in 2003, 12,000 pounds of HRC[®] (hydrogen reducing compound), a substrate to promote anaerobic biodegradation of contaminants in groundwater, was injected at 200 points and at depths from 15 to 25 feet bgs throughout the PCP contaminated groundwater plume. The removal action in 2003 addressed most of the items in the Buildings and Miscellaneous Items operable units identified in the 1999 ROD.

ROD, ESDs, and Remedial Construction Activities

The remedy selected by EPA in the 1999 ROD consisted of:

- For site wastes consisting of the drip track residue and the oils found on-site, the selected alternative was to remove the waste and have it disposed of at a hazardous waste facility.
- For site soils, a landfarm would be constructed in the northeast portion of the site.
- For NAPL removal, hot water flushing was the selected alternative.
- For the more highly contaminated groundwater plumes, the preferred alternative was enhanced in situ biological treatment using an oxygen release compound to facilitate aerobic degradation and air sparging rather than natural attenuation and ex situ biological treatment. Natural attenuation was the selected alternative for the other areas of the site where the groundwater contamination was at a much lower level.
- The buildings and other structures remaining on the site would be razed, asbestos containing materials inside the buildings would be abated, and debris piles, storage tanks, abandoned steel trams, and sumps and pits would be removed.
- The selected alternative for the “Miscellaneous Items” category is to remove the remaining miscellaneous items (debris pile, storage tanks, abandoned steel trams and several sumps and pits) that litter the site.

These remedies were chosen to meet the remedial action objectives (RAOs) for the site. The ROD defined these RAOs as:

- Prevent current nearby residents and potential future site workers from contacting, ingesting, or inhaling on-site soil and waste materials containing COPCs that exceed the calculated risk-based CUOs;
- Prevent the continued release of contaminants to groundwater;
- Initiate long-term groundwater restoration to MCLs;
- Abate regulated asbestos containing material (RACM) present in the on-site buildings;
- Remove listed hazardous waste from the site for treatment and disposal at an appropriately licensed facility; and
- To the extent practical, pump NAPL from the subsurface in the vicinity of the 22nd Street lagoon, and treat collected groundwater.

The remedial design for the remedy selected in the ROD was completed in July 2003, and on-site mobilization to start the remedial action occurred on September 24, 2004. Substantial and continuous remedial construction work began in April 2005.

In October 2005, an Explanation of Significant Differences (ESD) modified the soil remediation method from landfarming treatment in an on-site treatment unit to excavation and off-site disposal of contaminated soil. A second ESD, signed in June 2009, modified the remedy to include: institutional controls, the use of a different substrate to enhance in situ groundwater bioremediation, excavation of soils beneath 22nd Street, extraction and off-site disposal of non-aqueous phase liquid (NAPL) from the Jennite pit, and identification of a contingency remedy for potential additional NAPL and groundwater contamination in the Jennite pit area. The contingency remedy, which will be implemented if necessary, would consist of installing extraction and injection wells in the Jennite pit area. Then the NAPL from the Jennite pit would be treated in the treatment plant for the 22nd Street lagoon that was constructed as part of the original remedy.

On-site mobilization started in September 2004, and remedial construction activities took place in 2005, 2007, 2008 and 2009. Limited work was completed in 2006 due to lack of funding. The work completed during each year is summarized below.

During the 2005 remedial action work, activities accomplished included the following:

- A total of 54,014 tons of chlorinated polyaromatic hydrocarbon (CPAH) contaminated soil were transported for disposal to Milam Landfill, East St. Louis, Madison County, Illinois;
- A total of 3,451.5 tons of drip track residue and dioxin-contaminated soil were transported for off-site thermal incineration to Re'cupe're Sol, Inc. located in St. Ambroise, Quebec, Canada;
- A total of 511 tons of railroad ties were transported for disposal to Milam Landfill, East St. Louis, Madison County, Illinois;
- 160 tons of concrete were transported for recycling to Surmeier and Surmeier Aggregate Recycling, East St. Louis, Madison County, Illinois;
- 36,533 tons of backfill were brought to site for the north parcel from Milam Landfill, East St. Louis, Madison County, Illinois and 2,130 tons of backfill were brought to site for the south parcel from Barber Hill, Belleville, Illinois; and
- Miscellaneous repairs to the existing site fence.
- A total of 4,800 pounds of HRC[®] was injected at 62 points along two 240-foot long rows and at depths from 15 to 25 feet bgs in the PCP process area groundwater plume.

Excavation during 2005 focused on the northern portion of the site. The average depth of soil excavation for the north parcel was 2.3 feet, with depths ranging from 0.75 feet to 4.93 feet. A total of 43,040 cubic yards of material were excavated and disposed of. Once site cleanup objectives were met, the site was backfilled with clean soil. A drainage swale was constructed to allow for proper stormwater drainage to the northeastern corner of the property.

Remedial work in 2005 also addressed contamination in an area in the northeast corner of the site called Area H. The depth of contamination in Area H was determined to be 7.5 feet. These soils were excavated until it was determined that further excavation could affect the integrity of the neighboring railroad ballast. Excavation was halted and the Granite City, St. Louis & Eastern Belt Line Railroad and the Norfolk and Western Railway Company were consulted. The railroad would not allow further excavation and would not allow access for sheet pile installation; therefore, the excavation was backfilled with clean soil. A 60-mil high-density polyethylene (HDPE) liner was placed below the riprap overflow channel to protect surface soils from erosion and prevent stormwater from infiltrating through subsurface soils and mobilizing remaining contaminants. Post-excavation elevations were collected so that the cover soil may be stripped and contaminated soils removed if future access is granted by the railroad. A total of 450 cubic yards of soil from Area H was transported off-site for disposal.

During 2007, 2008 and 2009, cleanup was focused on the southern portion of the site. In 2007 and 2008, activities accomplished included:

- A total of 59,769 tons of CPAH contaminated soil were transported for disposal to Milam Landfill, East St. Louis, Madison County, Illinois;
- A total of 5,021 tons of drip track residue and dioxin-contaminated soil were transported for off-site thermal incineration to Clean Harbors Environmental Services, Inc.;
- A total of 35 tons of railroad ties were transported for disposal to Milam Landfill, East St. Louis, Madison County, Illinois;
- 120 tons of concrete were transported for recycling to Surmeier and Surmeier Aggregate Recycling, East St. Louis, Madison County, Illinois; and
- 95,294 tons of backfill were brought to site for the south parcel from Barber Hill, Belleville, Illinois.

During 2007 and 2008, removal of soils located on the south parcel of the property followed the same methods as employed on the north parcel. Soils that exhibited elevated levels of CPAHs and SVOCs above site cleanup objectives were excavated and transported off site to Milam Landfill, East St. Louis. Sampling was conducted at increasing depths for each sample location until cleanup objectives were met.

Soil and waste cleanup activities completed in 2009 included excavation of the remaining soil contamination in the south portion of the site, completion of the excavation in the PCP process area, excavation of the 22nd Street lagoon, and excavation of the Jennite pit. The majority of the 22nd Street lagoon required excavation to the groundwater table at approximately 18 feet bgs. The excavated soil was shipped off-site for incineration. The majority of the Jennite pit was excavated below the groundwater table to a depth of 25 feet bgs. The majority of the excavated soil is considered to be F032 listed waste (related to wood preserving processes) and was shipped off-site for incineration.

In 2009, activities accomplished related to soil excavation included:

- 72,774 tons of contaminated soil shipped to Milam
- 7,009 tons of soil designated as hazardous waste shipped off-site for incineration
- 122,371 tons of backfill material imported
- 35 railroad ties disposed of
- 120 tons of concrete transported off-site for recycling
- 18 soil grid areas were excavated and backfilled

Other activities completed during 2009 included installation of six monitoring wells, two extraction wells, and six hot water injection wells; additional injections of HRC® into the subsurface; excavation of contaminated soil from beneath 22nd Street; replacement of asphalt on 22nd Street; construction of the groundwater/NAPL treatment building; installation of electrical systems in the building; installation of piping within the building and between the building and the extraction and hot water injection wells; and connection of utilities.

The pre-final inspection was conducted by U.S. EPA, Illinois EPA, and Illinois EPA's contractors, E&E and Bodine Environmental Services, on September 17, 2009. The inspection consisted of a walk-through of the site, inspection of the extraction and hot water injection wells, and inspection of the treatment plant. The pre-final inspection showed that the construction was substantially completed and was carried out according to the remedial design plan and specifications. Activities that will be done at the site to ensure protectiveness and to reach site completion are summarized in Section IV.

Institutional Controls

Institutional controls (ICs) have not yet been implemented at the site. However, the planned ICs will be required to prohibit excavation of soils (and other appropriate land use restrictions) and/or restrict groundwater use in the following areas: to west of site in alley (groundwater restrictions only), along 22nd Street near eastern border of site, in the northeast corner of the site, and along most of the eastern border of site. Groundwater use restrictions will also be applied to all on-site areas where groundwater cleanup objectives have not yet been met. The Illinois legislature passed the Uniform Environmental Covenants Act, 765 ILCS Ch. 122 (UECA), which became effective on January 1, 2009. A UECA environmental covenant will be implemented to place restrictions on soil and groundwater use. Another alternative for placing restrictions on groundwater use is a city drinking water ordinance.

Redevelopment and Reuse

Currently, there is no on-site use of the property; however, it is zoned commercial/industrial. The anticipated future use of the property is assumed to be commercial/industrial.

III. DEMONSTRATION OF QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The Illinois EPA contractor, E&E, routinely provided oversight of construction activities performed by Bodine Environmental Services and found them to be substantially consistent with

the ROD, as modified, as well as RD plans and specifications.

The construction quality assurance plan incorporated U.S. EPA and Illinois EPA requirements. Confirmatory inspections, independent testing, audits, and evaluations of materials and workmanship were mostly performed in accordance with the construction drawings, technical specifications and CQAP. Construction quality assurance was performed by Illinois EPA's contractor, E&E, which maintained an on-site presence throughout most of the construction activities. Substantive requirements (such as physical testing) were required during remedial action and were successfully achieved. Known deviations or non-adherence to QA/QC protocols, drawings, or specifications were documented and resolved.

Monitoring, extraction, and hot water injection wells were designed, installed, and developed in accordance with requirements of the State of Illinois, U.S. EPA and contractor hydrogeological and well construction experts. A number of effluent and influent samples from the groundwater treatment facility will be collected to ensure national pollutant discharge and elimination system (NPDES) compliance and optimal system performance. Sampling of site monitoring wells occurred throughout the remedial action. Confirmatory soil sampling was performed for excavation work, and field air monitoring was performed during demolition work. The remedial action followed applicable Federal and State environmental and safety statutes, regulations, and policies. E&E was present on site and documented the majority of construction activities associated with the remedy. On-site E&E personnel included registered professional engineers as well as individuals experienced in oversight of environmental remedy construction.

The Quality Assurance Project Plan (QAPP) incorporated U.S. EPA and Illinois EPA procedures and protocol. U.S. EPA analytical methods were used for confirmation and monitoring samples. Illinois EPA and its contractor, E&E, in consultation with U.S. EPA, determined that the analytical results are accurate to the degree needed to assure satisfactory execution of the remedial action.

IV. ACTIVITIES AND SCHEDULE FOR SITE COMPLETION

The following activities are anticipated to be completed according to the schedule described below:

Task	Estimated Completion	Responsible Organization
Complete Final Inspection	October 2009	Illinois EPA/U.S. EPA
Install protective posts around six monitoring wells	October 2009	Illinois EPA
Approve O&M Plan	November 2009	Illinois EPA/U.S. EPA
Approve Operating Manual	November 2009	Illinois EPA/U.S. EPA
Institutional Controls Plan	December 2009	Illinois EPA

Task	Estimated Completion	Responsible Organization
Implement ICs	March 2010	Illinois EPA
Final grading and seeding	May 2010	Illinois EPA
Determine Remedy O&F	September 2010	Illinois EPA/U.S. EPA
Begin LTRA	September 2010	Illinois EPA/U.S. EPA
Approve Interim RA Report	November 2010	Illinois EPA/U.S. EPA
Second Five-Year Review	June 2014	Illinois EPA
Complete LTRA	September 2020	Illinois EPA
Approve Final RA Report	2025	Illinois EPA/U.S. EPA
Final Close Out Report	2025	Illinois EPA
Deletion from NPL	2026	U.S. EPA

Illinois EPA contractors will be conducting operation and maintenance of the remedy and monitoring of groundwater to satisfy the requirements for site completion and assure consistency with the NCP and the ROD.

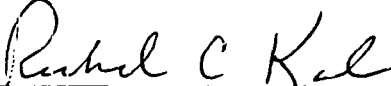
V. SUMMARY OF REMEDIATION COSTS

The original cost estimate to implement the remedial action described in the 1999 ROD was \$10,510,000 (net present worth) to address all portions of the site. More detailed cost estimate documentation can be found in the 1999 EE/CA. The two ESDs did not include revised costs. Total actual expenditures for the remedial action have thus far come to \$20,235,329. The construction contract award amount was \$18,611,329, and the project management contract award amount was \$1,624,000. O&M costs for the first year of operation are estimated to be approximately \$1,000,000. Additional costs were incurred during remedial action because the volume of CPAH contaminated soil and soil designated as hazardous waste was significantly underestimated in the ROD. The 1999 ROD estimated that a total of approximately 55,000 cubic yards of contaminated soil and waste would be removed from the site. In actuality, nearly this amount of contaminated soil, 43,000 cubic yards, was excavated from the northern portion of the site during the first year of construction alone. In addition, higher than expected costs were incurred due to more rounds of HRC[®] injections being needed than anticipated, and the increase in energy costs for natural gas for the groundwater/NAPL treatment system.

VI. FIVE-YEAR REVIEWS

Hazardous substances will remain at the site above levels that allow unlimited use and unrestricted exposure after completion of the remedial action. Pursuant to CERCLA section

121(c) and 40 CFR 300.430(f)(4)(ii) U.S. EPA must conduct statutory five-year reviews. The first five-year review report was completed on June 15, 2009, in accordance with the Comprehensive Five-Year Review Guidance (OSWER Directive 9355.7-03B-P). It found that the remedy is expected to be protective of human health and the environment upon completion of construction, the attainment of groundwater cleanup objectives, and the implementation of ICs. The second five-year review will be completed by June 2014.


Richard C. Karl
Director
Superfund Division

9-28-09
Date